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[REDACTED]

MBP:GMD

July 27, 1954

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Dr. Thomas L. Shipman  
Health Division Leader  
Los Alamos Scientific Laboratory  
P. O. Box 1663  
Los Alamos, New Mexico

Dear Tom:

Attached is a copy of a memo that I sent to Dr. Bugher on soil analysis. It is obviously only preliminary data but I thought you would find them of interest. The Sr<sup>89</sup>-90 measurements were made at the HYCO Laboratory.

Cordially yours,

Gordon M. Dunning  
Health Physicist  
Biophysics Branch  
Division of Biology and Medicine

Enclosure:

Memo, 5/24/54, Dunning to Bugher w/encl.  
(Cv. 1B of memo and cv. 1B of encl.)

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MILITARY RESEARCH & APP.

15  
RECORDED DATA  
BMBP:GMD

July 27, 1954

RECORDED DATA  
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Dr. C. A. Sondhaus  
U. S. Naval Radiological Defense Laboratory  
U. S. Naval Shipyard  
Hunter's Point  
San Francisco 24, California

Dear Dr. Sondhaus:

Attached is a copy of a memo that I sent to Dr. Bugher on soil analysis. It is obviously only preliminary data but I thought you would find them of interest. The Sr<sup>89-90</sup> measurements were made at the NYCO Laboratory.

Cordially yours,

Gordon M. Dunning  
Health Physicist  
Biophysics Branch  
Division of Biology and Medicine

Enclosure:

Memo dtd 5/24/54 (Cy. 3B), Dunning to Bugher  
w/attachment (Cy. 3B)

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July 27, 1954

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DATE 7-27-2014 BY SP500106b

Cdr. E. P. Cronkite  
Naval Medical Research Institute  
Bethesda, Maryland

Dear Gene:

Attached is a copy of a memo that I sent to Dr. Bugher on soil analysis. It is obviously only preliminary data but I thought you would find them of interest. The Sr<sup>89-90</sup> measurements were made at the NYCO Laboratory.

Cordially yours,

Gordon M. Dunning  
Health Physicist  
Biophysics Branch  
Division of Biology and Medicine

Enclosure:  
Memo dtd 5/24/54 (Cy.2B), Dunning to Bugher  
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Dunning/mjh

MAIL DATE 7-27-2014 11:57:11 AM

Dr. John C. Bugher, M.D., Director  
Division of Biology and Medicine

May 24, 1954

Gordon L. Dunning, Health Physicist  
Biophysics Branch, Division of Biology and Medicine

ESTIMATED SR<sup>90</sup> CONTENT IN SOILS FROM THE PACIFIC ISLANDS

SYMBOL: BMBP:CMD

The attached sheet gives a summary of the data on the Sr<sup>90</sup>-Sr<sup>90</sup> and Cr<sup>90</sup> for soils taken from the Pacific Islands indicated.

The Sr<sup>90</sup>-Sr<sup>90</sup> activity was measured and then the Sr<sup>90</sup> activity was estimated from this by the use of the Hunter and Ballou tables. Likewise, the total activity was measured and the activity of Sr<sup>90</sup>-Cr<sup>90</sup> was estimated from this by the use of Hunter and Ballou tables. One may thus compare the Sr<sup>90</sup>-Sr<sup>90</sup> activity as measured with the estimated amounts calculated from the total activity.

The highest Cr<sup>90</sup> value was 0.5  $\mu$ c/sq.ft. on the island of Maen. The highest Cr<sup>90</sup> value on Rongelap Island was  $1.0 \times 10^{-2}$   $\mu$ c/sq.ft. It has been estimated that if one were to exist entirely on plant life grown in soils with 1,000 lbs. of calcium per acre and containing 15  $\mu$ c/acre of Cr<sup>90</sup> (about 1  $\mu$ c/sq.ft.), over a period of years there would be deposited a body burden of 1/ $\mu$ c of Sr<sup>90</sup>. In the case of these soils the following points should be indicated:

- (1) Only a small fraction of the natives' food supply comes from plant life grown on the islands. (Most of their diet consists of fish and food supplies purchased from visiting ships.)
- (2) The calcium content is significantly greater than 1,000 lbs. per acre which will correspondingly reduce the Sr<sup>90</sup> uptake.
- (3) Weathering may be expected to eliminate a small amount of the activity.

These data would indicate that the Sr<sup>90</sup> activity of the soils would not be a deterrent to the return of the natives to their home islands.

\*Private communication from Dr. L.A. Lean, U.S. Dept. of Agriculture, to Dr. Gordon Dunning, dtd 4/23/54.

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Location	$\frac{r^2}{(cc/\text{ft}^2)}$ estimated	$\frac{r^2 - r'^2}{(cc/\text{ft}^2)}$ (measured)	Total activity $\frac{\mu\text{c}/\text{ft}^2}{\text{measured}}$	$\frac{\mu\text{c}/\text{ft}^2}{\text{fromtotalactivity}}$
Nikiep	$1.5 \times 10^{-4}$	$1.7 \times 10^{-3}$	$1.2 \times 10^{-4}$	$1.2 \times 10^{-4}$
Jemo	$1.5 \times 10^{-4}$	$1.2 \times 10^{-3}$	$1.0 \times 10^{-4}$	$3.0 \times 10^{-4}$
Alul	$1.7 \times 10^{-4}$	$1.1 \times 10^{-3}$	1.0	$1.0 \times 10^{-4}$
Mejuit	$1.8 \times 10^{-4}$	$3.9 \times 10^{-3}$	1.1	$1.1 \times 10^{-4}$
Ormed	$1.8 \times 10^{-4}$	$1.1 \times 10^{-3}$	$1.2 \times 10^{-1}$	$3.2 \times 10^{-4}$
Kaven	$1.8 \times 10^{-4}$	$1.0 \times 10^{-3}$	$1.4 \times 10^{-1}$	$1.6 \times 10^{-4}$
Otho	$1.8 \times 10^{-4}$	$1.0 \times 10^{-3}$	$7.0 \times 10^{-2}$	$7.8 \times 10^{-4}$
Rongelau				
(Nor. Island)	$1.0 \times 10^{-2}$	1.08	1.0	6.2
(Central)	$5.0 \times 10^{-3}$	$2.5 \times 10^{-1}$	20.0	4.0
(S. M. Williams)	$1.0 \times 10^{-2}$	$1.0 \times 10^{-1}$	1.0	$5.0 \times 10^{-3}$
(So. Eastern)	$1.4 \times 10^{-2}$	$2.2 \times 10^{-1}$	1.5	$4.5 \times 10^{-3}$
Mirippu	$1.0 \times 10^{-1}$	10.0	220.0	23.0
Niwetok	$1.0 \times 10^{-2}$	1.0	1.0.0	5.0
Kabello	$1.0 \times 10^{-2}$	1.0	200.0	20.0
Utirik	$1.0 \times 10^{-3}$	$2.0 \times 10^{-2}$	13.0	5.3
Bikar	$6.6 \times 10^{-3}$	$4.4 \times 10^{-1}$	1.3	$3.3 \times 10^{-4}$
Niwetak	$1.0 \times 10^{-3}$	$5.6 \times 10^{-1}$	1.0	$3.0 \times 10^{-4}$
Lifo	$1.0 \times 10^{-3}$	$2.6 \times 10^{-2}$	$1.1 \times 10^{-1}$	$6.1 \times 10^{-4}$
Macen	$1.0 \times 10^{-1}$			

All data as of May 5, 1954, except island of Mirippu where date is May 20.  
 \*Estimated from correlation with dose-rate survey readings with Mirippu. Highest fallout in any island measured.

RECONSTRUCTION: DR = Dr. Warner  
 DR = Dr. Paul Pearson  
 DR = Dr. Robert Coville, F.R.S.  
 DR = Dr. W. L. Johnson